GAS JOURNAL

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THERMAL EFFICIENCY AND SO ON

NEARLY a decade ago we suggested in these columns that the gas industry, in all good faith, had become somewhat bemused by reiteration of the thermal efficiency of carbonisation at the high figure around 80%. This figure sounds very well, of course, and it happens to be true. But, after all, it is a process figure. And in emphasising this point at the time we said that it was easy enough to point a contemptuous or withering finger at the electricity industry with its one useful product from coal—electrical energy. We added that equally it was facile to say that in producing gas the gas industry also produces coke, and to forget that the coke is probably used at an efficiency not very much greater than that of the raw coal from which it was made. Developing our argument we commented that a ton of coal contains round about 300 potential therms. We use as fuel in gas-making some 70 therms to produce 80 therms of gas. The efficiency of gas production is, say, 53%. If we use this gas at 50% efficiency the overall thermal conversion efficiency of coal to useful heat via gas is about 27%.

We recall the foregoing comment in view of the recent speech—we almost said 'outburst'—by Sir John Hacking, Deputy Chairman of the British Electricity Authority, at the annual luncheon of the Institute of Fuel, and in view also of the volume of correspondence on fuel efficiency published in the national Press, notably in *The Times*. Sir John Hacking's speech (in reply to the toast of 'The Guests') was a long one; it was almost in the nature of a technical paper. From the word go Sir John rammed home point after point to confute 'misleading' statements in the House and in the newspapers. He gave a figure of 22% as the average thermal efficiency of electricity generation from coal in 1951-52, and mentioned that the plan was to increase this figure to over 26% by 1960. Already, he said, there are several stations operating at efficiencies approaching 30%, and this figure was likely to be exceeded in the future. Returning to the present average of 22%, and allowing for distribution losses, he gave an efficiency of 19% for electricity delivered to the consumer. His next step was to 'follow the Gas Council's example' and use a figure of 47% as the efficiency of gas production, and then by devious means (to our mind by faulty reasoning) he reduced the figure to 38%, and, taking a 50% utilisation efficiency of a gas fire, concluded that the overall efficiency of the gas fire, at 19%, was the same as that of the electric fire. He concluded that, on purely thermal grounds, the domestic continuous heating load should be met by solid fuels in efficient modern appliances and that for all other heating consumers should be free to use either electricity or gas according to circumstances and personal preference. This conclusion, however, did not end Sir John Hacking's speech. Far from it. Before counsel for the defence sat down he elaborated the convenience of electricity in the home, the use by the electricity industry of low-grade coals and the 'lowest form of washery residues,' and the need for 'healthy and fair' competition.

We are not going to pretend that we are counsel for the prosecution on this thermal efficiency business or to assume the rôle of judge. Much money is being spent on research on how to keep people warm and we suppose that, as a result of this brain-time energy, we shall be little better off in the coming winter if the climatic conditions are similar to those of the 1946-47 winter. In any event, Sir John Hacking's arguments cover only a particular segment of the fuel problem. To bring the subject into broader concept, we think it is at least an approximation to known facts that, on an average, every two tons of coal processed at a gasworks these days produces about 150 therms of gas and a ton of coke for sale. If this coke did not go into the solid fuel market it would have to be replaced by mining at least an extra ton of coal. The production of 150 therms of gas can be regarded as having used one ton of coal. In all heating loads, heating by gas requires roughly half the coal needed for heating by electricity. And this again is only one angle of the problem. It is commonplace that the supply of electricity falls very much short of

industrial demand and that industrial life and progress depend very largely on electricity supply. Unfortunately, as emphasised in a letter to *The Times* of May 13, the freedom of the householder to buy as much electricity as he wants has serious repercussions on industry. Every winter industry has to dislocate its working arrangements to suit power stations to sell what they have not got. In severe weather it may have to stop production altogether through lack of power as it did in 1947, when £200 mill. of exports were lost in consequence. And in any consideration of the problem there are at least two other factors which have much weight—the gas industry's ability, at any rate relatively to electricity, to meet peak loads; and the gas industry's capacity to provide its fuel services at a relatively low requirement of capital investment per unit of demand. For example, not less than twice the amount of capital is required to supply current to an electric cooker as is needed to furnish the gas for an equivalent gas cooker. We cannot ignore these considerations. Thermal efficiency, though an important aspect, is one aspect only of the question of making the best use of coal. Methods of trading also enter into the 'healthy and fair' competition plea made by Sir John Hacking. But that is another, and a vexed, matter.

A CANDID ADDRESS

WHEN he delivered his address as Chairman of the Midland Section of the Institution of Gas Engineers, Mr. J. E. Wakeford emphasised that he was expressing his own opinions and that he did not know (and if he cared we know not) whether or not they agreed with those of the West Midlands Gas Board whom he serves as Birmingham Divisional Manager. It was one of the most outspoken addresses we have had the pleasure of hearing for some time, mainly because of its diagnosis of the present day reluctance of gas engineers to give vocal expression to individual ideas and outlook, and of its reference to the 'lamentable' salaries now being offered in certain quarters. Looking back over a quarter of a century in the gas industry he recalled the days of over 1,000 undertakings, when managers freely exchanged their views on commercial, technical, and engineering problems. Much the same number of individuals hold their own views today no less strongly than in the years before nationalisation, but fewer of them are speaking with the same candour. Nationalisation, says Mr. Wakeford, must not be held to blame for the change, but it may well be that members are now sometimes a little reluctant to express views which are contrary to current practice in the industry as a whole or opposed to that of their own board in particular. 'As members of a professional organisation we shall make little progress if the practice at district meetings is to pat each other on the back and say how right we are,' he added. Here let us interpolate that one of the little things we enjoyed most at the Skegness staff conference of the East Midlands Gas Board was the way in which the manager of one little works in particular—one making only 30 mill. cu. ft. a year—persistently spoke up for the small man, often in direct opposition to established policy.

Turning to education and recruitment, Mr. Wakeford expressed extreme discouragement at the 'lamentable salaries frequently offered in the Technical Press for qualified men for responsible positions.' He rightly pointed out that gas engineers are specialists in an industry where today there is, in fact, only one employer—an industry from which there is no escape. For that reason new entrants must be doubly satisfied as to the attractiveness of the industry. The work of the gas engineer is increasing in importance and scope and is demanding greater knowledge, better training, and wider experience, and it is only reasonable to expect that the better a man's professional equipment the higher should be his remuneration. Eleven years ago the Institution of Gas Engineers took steps in conjunction with the then National Gas Council to safeguard the interests of its members in this respect and drew up a recommended scale of minimum commencing salaries for chief engineers and chief assistant engineers of various sized undertakings. Some who are members of the Gas Council and the area boards today were parties to the recommendations of 1941, as members of the Institution Council or the N.G.C. Central Executive Board, but it would appear from Mr. Wakeford's address that the scales, adjusted to current cost of living, are not being fully implemented. Had they been used as a basis for engineering appointments in the nationalised industry there would have been less fear as to recruitment of the right type of man, but under present salary circumstances Mr. Wakeford feels that 'whatever is done by the Gas Council or the area boards in the form of recruitment, training, and education, the industry is most unlikely to attract or to retain men of high calibre.' Passing on to more general matters, Mr. Wakeford found warm sympathy from many of his fellow members when he spoke of all the obstacles—planning permission, Royal Fine Arts Commission, National Coal Board, effluents disposal, and the like—which stand in the way of the discharge by the area boards of their statutory obligations to develop and maintain an efficient, co-ordinated, and economical system of gas supply. Shortages of steel and other materials on the one hand, and these obstacles on the other, do not tend to make the path of the engineer and manager easier. Notwithstanding his candid criticisms, Mr. Wakeford is still an optimist and looks forward to the time when the gas engineer in charge of the individual undertaking will, as in the old days of companies and gas committees, be allowed to play a part in guiding policy.

B.E.D.A. REGRETS

'VERY real regret' has been expressed by the British Electrical Development Association concerning the wording of an article headed 'Pity the Poor Housewife' which was circulated to a number of newspapers and periodicals and which contained references to 'attempts by a power group in the House of Commons to bludgeon housewives into using other methods of heating than electricity.' As stated in our Parliamentary notes on May 14 a group of 65 Conservative Members of Parliament, headed by Mr. G. Nabarro and Mr. C. J. M. Alport, tabled a motion in the House of Commons criticising the Association, which is a publicity organisation supported by the

nationalised British Electricity Authority, for using public money to impugn the motives of Members in legitimately criticising the Authority's policy. Shortly after it had been reported that the motion had been tabled, the Council of the Association issued a statement expressing 'very real regret that in pressing a legitimate argument on behalf of the electricity supply industry the article used phraseology having imputations which could not be justified.'

TIME AND MOTION STUDIES

OPPOSITION to 'efficiency teams,' time and motion study experts, intelligence quotient tests, and personnel grading schemes was expressed at the recent annual conference of the National Committee of the Amalgamated Engineering Union at Blackpool. The 52 delegates decided unanimously that the Executive Council should set up an enquiry into systems known as personnel administration and personnel assessment with a view to cancelling them out if they were not in the interests of members. A Chesterfield member said that a firm in his locality had introduced at a cost of £26,000 a scheme supervised by Oxford dons which even took into account the time it took workers to take off their coats and put them back at the end of the shift. One feature of it was the taking of five minutes rest for every hour worked. Even floor sweepers had their time fixed for the coverage of certain amounts of floor space. Delegates were unanimously in favour of the reference back of an item on piecework in the Executive Council's report. Last year the conference demanded a revision of part of the piecework agreement which dealt with the setting of prices for workmen of 'average ability.' There was reference to 'motion study' also at the East Midlands Gas Board staff conference at Skegness. Mr. John Mould, Deputy Chairman of the East Midlands Electricity Board, related how a party of American motion study experts were impressed, in looking round the Board's new offices in course of erection, with the fact that of five men trundling wheelbarrows, four pushed and one pulled. Consultation among the experts failed to reveal the reason for the one man's *modus operandi*, and the leader of the party was deputed to ask the man himself. 'It's quite simple, sir,' he replied, 'I hate the sight of the barrow.'

INDUSTRIAL OUTPUT

ACCORDING to the *World Economic Report, 1950-51*, released by the United Nations the world, after a year and a half of widespread rearmament activity, produced more goods in 1951 than during any previous year. The increase in total production from 1950 to 1951 was greater than the increase in the production of military goods, and the supply of civilian goods did not decline and even rose in many countries during that period. A chart accompanying the report shows that the biggest percentage increases in industrial production were in Japan, Germany, and the eastern European countries, and that with the exception of Denmark the United Kingdom had the lowest increase. Within the framework of controls and fiscal measures established by the various Governments raw material supplies in 1951 were sufficient to allow generally an even greater expansion of industrial output in 1951 than had taken place in 1950. The crucial fact, says the report, is that rearmament did not proceed at the rates originally announced. Industrialised countries which are predominantly exporters of manufactures and importers of raw materials suffered a deterioration in terms of trade of about 10% between the first halves of 1950 and 1951 followed by a small improvement in the second half of 1951. Emphasis is laid on the need for international action designed to bring about an adequate international flow of capital to the under-developed countries, to elaborate new techniques for stabilising the demand for and prices of primary commodities traded internationally, or to introduce other arrangements that would, under mutually acceptable conditions, enable the industrialised countries to increase the supply of machinery and equipment to the under-developed countries. The survey is prepared annually to aid the Economic and Social Council to take stock of the world economic situation.

PRODUCTIVITY TEAMS

THE 16 representatives of the gas industry who recently returned from the United States were probably the last team to make the journey under the auspices of the Anglo-American Council on Productivity, whose fifth and last meeting was held in London on May 8. The whole enterprise, which has cost £884,500 in the three and a half years of the Council's existence, is to be replaced by a British Productivity Council supported by the Federation of British Industries, the British Employers' Confederation, and the Trades Union Congress. The new Council is still in a formative stage and may not begin to function for several months. The purpose of the old Council was to improve the productivity in Britain by letting British manufacturers learn how American manufacturers had reduced production costs, or, in the words of an official statement, 'the exchange of information and knowledge concerning industrial productivity and related subjects with the generous intention of making available to war-scarred Britain the latest techniques which had been developed in America.' The Council was financed in part by the Economic Co-operation Administration and cost that organisation a fraction of 1% of its total funds; the rest of the money was provided by American manufacturers and trade unions, by the British Government, British industries, and British trade unions.

Sixty-six teams, comprising 911 people, have made the trip, and each was shown as much as possible in six weeks of the American counterpart of the industry to which they belonged, and of American methods of production in particular. Forty-seven teams have already published the results of their investigations and some of the published reports have been widely distributed, that on the building industry having been sold to nearly 40,000 readers on both sides of the Atlantic. Later the Council will issue detailed summaries containing some striking examples of developments; one such summary, issued by the steelfounders, has already been given publicity. While the members of the gas industry team are apparently at liberty to talk about their personal impressions their official report is not expected to be published until towards the end of the year. A personal by-product of the visit was that Mr. E. M. Edwards discovered 55 long-lost relatives in the States.

Provisional figures issued by the Board of Trade show that the value of the United Kingdom's exports in April was £217,600,000, compared with an average of £239,500,000 for the first quarter of the year. Owing to the Easter holidays there were only 24 working days compared with the standard 26. The extent to which the Australian import restrictions and other measures taken by other sterling Commonwealth countries contributed to the decline in exports will not be known until the final figures are available. Re-exports, provisionally valued at £11,500,000, compared with an average of £18,300,000 in the first quarter. Imports were £325,200,000, the monthly average for the first quarter being £328,100,000.

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Personal

Mr. R. N. Quirk, Under Secretary of the Gas Division of the Ministry of Fuel and Power, has been appointed Secretary of the office of the Lord President of the Council in succession to **Mr. E. M. Nicholson.**

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Mr. J. Parry has been appointed General Manager of Crypto, Ltd. The reorganisation of the management of the Company following the sudden death last January of Mr. W. G. Swain, the founder and first Managing Director, has been completed by Mr. Parry's appointment and that of **Mr. A. G. Parish** as General Sales Manager and **Mr. E. W. Day** as Home Sales Manager. Mr. D. C. Lorkin and Mr. S. G. Mundy remain Joint Managing Directors, and Mr. J. Feder as Export Sales Manager.

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Mr. C. E. Pritchard, ASSOC.INST.GAS E., has been appointed Manager and Secretary of the Monmouth gas and water undertaking of the Wales Gas Board as from June 1. Mr. Pritchard was employed by the Kidderminster Gas Company for 11 years before moving to Monmouth in 1926. In 1938 he was appointed Assistant Manager and Secretary and Water Superintendent of the Monmouth Company. His appointment as Manager and Secretary follows the retirement of Mr. A. E. Pask from that post on May 31.

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Mr. R. H. Pitchford, A.C.C.A., Chief Internal Auditor to the Hospital Management Committee, Tunbridge Wells, has been appointed Assistant Chief Auditor to the West Midlands Gas Board. Other recent West Midlands appointments include **Mr. E. S. Moule** (North Thames) as Technical Assistant in the Birmingham Industrial Department; **Mr. T. Bryan,** B.SC., A.M.I.E.E (Yorkshire Electricity Board), as Assistant Electrical Engineer, Birmingham; and **Mr. R. E. Allen** (Worcester) as Distribution Superintendent, Hereford.

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Mr. P. J. Bovill, B.SC., M.I.I.A., Vice-Chairman of the local Board and General Manager of the Chemicals Branch of Newton Chambers & Co., Ltd., accompanied by Mrs. Bovill, will fly in the *Comet* on May 23. They will be on holiday, but during the visit Mr. Bovill will have a number of important meetings in connection with his Company's business interests in East Africa. As Chairman of the Sheffield No. 1 Hospital Management Committee, Mr. Bovill will have a special interest in visiting hospitals in Nairobi, including the Lady Grigg Maternity Hospital and the Pumwani Maternity Hospital, both of which were visited by the Queen in February.

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Mr. S. C. Tyrrell, F.C.W.A., F.I.I.A., was elected President of the Institute of Cost and Works Accountants at the annual meeting at Buxton, on May 17.

Mr. Tyrrell is a local Directtor and Chief Accountant of the Newton Chambers & Co., Ltd., group of companies, Sheffield, ironfounders, engineers, and chemical manufacturers. He is Chairman of the Costing Committee of the T. & I.P.A. which produced the 'Manual of Uniform Cost Accounting for Steel Fabricating and Kindred Industries,' and is the author of a number of papers on accounting and management subjects. Mr. S. J. D. Berger, Director of the Institute, said Mr. Tyrrell would bring to his new office those outstanding qualities which had characterised him in the past. His year of office should be eventful, not only through developments in the accounting profession, but throughout industry. It might well prove a year of historical importance.

Obituary

Members of the Institution of Gas Engineers will learn with regret of the death, on May 5, at the age of 76, of **Mr. J. H. Winder,** who was for many years Chief Clerk of the Institution. Mr. Winder joined the Institution in 1919, immediately after leaving the Army after the 1914-18 war, and he gave to it his continuous and devoted service until his retirement in 1946. He possessed a dry humour and a remarkable memory and even in his retirement he delighted to recall his early experiences with the Institution. At the annual general meeting in June, 1946, the President handed to Mr. Winder a cheque to which a large number of his friends in the Institution had contributed, and Mr. Winder expressed his appreciation in characteristic manner.

Diary

May 23.—Wales G.C.C.: Civic Centre, Tenby, 10 a.m., followed by visit to the new butane/air plant at Whitland.

May 24.—Eastern Juniors: Annual General Meeting, Stamford, followed by afternoon visit to places of interest. Ladies invited.

May 24.—Scottish Juniors (Western): President's Day visit to Stirling gasworks.

May 26.—West Midlands G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

May 27.—Gas Officers' Guild: Annual General Meeting, Bishop Partridge Hall, Church House, S.W.1. 5 p.m.

May 27-30.—Institution of Gas Engineers: 89th Annual General Meeting, London. (For full programme see *Journal* of May 7, p. 300.)

May 29.—North Thames G.C.C.: Westminster City Hall, 2.30 p.m.

June 3.—South Eastern G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

June 4.—Southern G.C.C.: Grand Hotel, Bournemouth, 11 a.m.

June 5.—Midland Juniors: Ladies' Day.

June 7.—Wales Juniors (North Wales Section): Ladies' Day, Llandudno.

June 7.—Scottish Juniors (Eastern): Annual Outing, Grangemouth.

June 9-10.—Eastern Section, I.G.E.: Spring Meeting, Grand Hotel, Sheringham. June 9: Golf and Bowls; afternoon meeting, with Chairman's Address by T. C. Battersby; evening reception. June 10: Business meeting, paper by G. E. Thomas, Industrial Gas Engineer, Watford Division; official luncheon.

June 11.—South Western G.C.C.: Meeting at 34, Bridge Street, Taunton, 11 a.m.

June 13.—London and Southern Juniors: Annual Business Meeting, 178, Edgware Road, 6.30 p.m.

June 16-21.—International Gas Union: Fifth International Gas Conference, Brussels.

June 20.—Scottish Juniors (Western): Annual Golf Outing and Competition.

June 21.—Western Juniors: Summer Meeting and Ladies' Day, Minehead.

June 21.—London and Southern Juniors: Summer Visit and Ladies' Day, Maidstone.

June 21.—Manchester Juniors: Ladies' Day, Morecambe and Lancaster.

June 23-25.—British Wood Preserving Association: Second Convention, Queen's College, Cambridge.

June 24.—London and Southern Section, I.G.E.: Summer Meeting.

June 26.—North Thames G.C.C.: Caxton Hall, Westminster, 2.30 p.m.

News in Brief

The Nor-Reps Golf Circle opened its season with an evening match against a team consisting of the Chairman, Officials and group General Managers of the North Eastern Gas Board, at Scarcroft Golf Course, Leeds. The Circle has also played the Leeds group, and the York-Harrogate group over the same course this season.

Refresher Courses.—With the co-operation of the North Western Gas Board, refresher courses on the use of gas for domestic purposes were arranged in the Manchester gas showrooms on May 7, 8 and 9, for homecraft teachers from Oldham, Salford, Rochdale, and Manchester. In addition to lectures on 'How Gas Burns,' 'The Gas Cooker and Cooker Thermostat,' 'Refrigeration' and 'Water Heating,' the teachers had an opportunity of seeing an exhibition of visual aids, which can be obtained, on request, from the Gas Board, and details of all the tests for efficiency and performance that are carried out on domestic gas appliances.

A Product Development and Research Department has been formed in the 'Shell' London Office under the management of Dr. C. G. Williams. The functions of this new department include the direction and co-ordination of laboratories in the United Kingdom, and of that portion of the Group's research programme which is carried out in this country. Dr. C. B. Davies has been appointed Manager of Thornton Research Centre in succession to Dr. Williams. Mr. W. R. P. Hodgson will continue as Manager of the Central Laboratories. Mr. A. Wilson has been appointed Manager of the Technical Division of Product Development and Research Department in London.

Stotts of Oldham staged a special display of industrial and commercial appliances at the Sauchiehall Street Gas Centre, Glasgow, with Mr. Spreckley in attendance. The show adopted an attractive technique of screening off a section of the premises into a window showroom, giving a 'shop within a shop.' The show covered the full range of Stotts catering equipment. The exhibition, staged by co-operation with the Scottish Gas Board, attracted a large attendance of catering buyers.

Street Lamp Damage.—Following an epidemic of street lamp smashing, a watch was kept by the Liverpool police which resulted in two boys aged 10 and 15 years respectively being caught. They were summoned for breaking 17 lamps, and the Juvenile Court magistrates ordered each of them to pay £5 10s. compensation and a fine of 10s. It is estimated that the Lighting Committee has to pay approximately £5,000 a year to cover damage to street lamps in the city.

Training and Lecture Techniques

MR. R. N. LeFEVRE, Training and Education Officer, North Thames Gas Board, was one of the speakers at the national industrial safety conference held by the Royal Society for the Prevention of Accidents at Scarborough on May 16-18. The conference was attended by over 600 delegates.

Speaking on 'Training and Lecture Techniques' Mr. LeFevre dealt with the most suitable forms of instruction technique for trainees under instruction for safety or production methods, but pointed out that, 'apart from specific instruction in safety which the safety officer may give in the course of his work, safety should be a point to be stressed by all concerned with industrial training, whether they be full-time instructors or supervisors training their workpeople on the job.'

The object of industrial training Mr. LeFevre summarised as 'getting the job done satisfactorily to all concerned, namely, the public (the ultimate result), the worker and the management—the worker will co-operate in getting the job done satisfactorily if he is properly trained so that he knows what he is doing, why he is doing it, and where it is leading him.' Mr. LeFevre listed the five fundamentals of instruction as:—(1) Capturing interest early and holding it; (2) building on a known foundation and in a logical manner; (3) class activity (acting and thinking for themselves); (4) testing to prove their knowledge of fundamentals and the progress made; (5) repetition to ensure proficiency and retention of skill or knowledge.

The secret of good instruction technique was knowledge of these five fundamentals. Futhermore, in addition to being a master of his subject an instructor must be something of a salesman so that his trainees will be 'sold' on the importance of the subjects: and he must have the skill of an actor at adding realism, keenness, and interest. 'An instructor must,' said Mr. LeFevre, 'have patience; but, above all, he must have the gift of being able to use simple language and the ability to use simple methods and keep them simple. Simplicity is the keynote of instruction.'

PARKINSON AND COWAN DINNER PARTY

Photograph taken on the occasion of a dinner given at the Trocadero Restaurant on May 2 by the Directors of Parkinson and Cowan, Ltd., to their group sales staff

IN PARLIAMENT

Free Gifts of Electricity

THE propriety of a nationalised industry giving away its products, even to a Government department, was questioned in the House on May 12 when Captain CHARLES WATERHOUSE (Leicester, South-East) asked the Minister of Fuel and Power if he would make a statement as to the directions he would give to the electricity authorities that no current should be supplied free of charge.

On being informed by Mr. GEOFFREY LLOYD that he was not proposing to issue such directions, Captain WATERHOUSE pointed out that the London Electricity Board had apparently made an arrangement to give a free supply of current to the Ministry of Works for floodlighting. Did the Minister consider it right, he asked, that the cost should be met by the domestic consumer? Was that not bad for the economy of publicly-owned services?

Mr. LLOYD said they ought to remember that before the war all the electricity supply companies banded together to make a similar offer for floodlighting—he thought it was in 1935. In the present case the proposal was to illuminate a small number of public buildings: the Houses of Parliament, Somerset House, Nelson's Column, and so on; and it would be a pity, simply because the industry was nationalised, if the Minister restrained the Board in what he believed was a helpful gesture on their part.

Captain WATERHOUSE was more concerned, however, with the principle of the thing; there was no objection at all to the floodlighting, which was very desirable. It was entirely a matter of whether the Minister thought it wrong in principle that a publicly-owned concern should make a free gift of current either to a Government Department or to anybody else. Mr. LLOYD said he certainly did not think such concerns should make free gifts as a general rule, but he did not consider there was any case for intervention on this occasion.

Mr. PHILIP NOEL-BAKER (Derby, South) observed that when electricity was under private enterprise did not the consumers pay as they did now, and did not the consumers in London benefit from floodlighting? At this point Mr. GERALD NABARRO (Kidderminster) gave notice that in view of the unsatisfactory position in regard to electricity he would raise the matter on the adjournment.

Fuel Efficiency Questions

Mr. NABARRO had a veritable field-day at Question Time on May 12. Having fired a couple of initial rounds—one on the subject of standardisation of electricity tariffs and another on coal production during the four months ended April 30—he turned his guns on the Ministry's Fuel Efficiency Division. Would the Minister issue a statement (in convenient form) reporting the activities of the Division during the past year, its staffing, its cost, its proposals, and its propaganda?

While not considering that the matter called for a White Paper (we had been wondering how so searching a question could be answered in anything less), Mr. LLOYD said he would certainly take any suitable opportunity of making a statement.

The House of Commons is by no means the only assembly which regularly exemplifies two (or more) minds with but a single thought, but it is surprising how frequently Question Time brings forth queries by several members on the same subject, sometimes couched in almost identical terms. Indeed, we have often felt puzzled that the rationalisation or co-ordination which is always being recommended for the fuel industries is not applied to Parliamentary Questions—to the not inconsiderable saving of time and paper. Here is an example. On the same day Mr. C. J. M. ALPORT (Colchester), Brigadier FRANK MEDLICOTT (Norfolk, Central), and Mr. PHILLIPS PRICE (Gloucestershire, West) all asked the Minister of Fuel and Power if he could make a statement on the Government's plans regarding loans for the installation of fuel-saving equipment—a question, incidentally, which has already been asked on several previous occasions. Hon. Members are obviously not going to allow the matter to be pigeon-holed.

Mr. LLOYD said that consultation on the details of the scheme are now taking place with representatives of industry, and he hoped to be able to announce the details by the end of the month. Mr. NOEL-BAKER pressed for information as soon as possible about the applications which are made by industrialists, and the Minister promised this.

Ridley Committee Report

Mr. PHILIPS PRICE asked the Minister of Fuel and Power when he expects to receive a report from the Ridley Committee dealing with the better co-ordination of the fuel and power industries.

Mr. LLOYD intimated, in a written answer, that the Committee hopes to report to him within the next few months.

Sulphur Recovery

Air Commodore A. V. HARVEY (Chester, Macclesfield) asked the Secretary for Overseas Trade, as representing the Chancellor of the Duchy of Lancaster, what progress had been made in the matter of sulphur recovery from gases from coke ovens, particularly those owned by the steel industry and by the N.C.B.

In reply, Mr. H. G. STRAUSS (Parliamentary Secretary to the Board of Trade) said that plants were now under construction for the recovery of some 10,000 tons of sulphur annually in the form of sulphuric acid. Other projects are under consideration.

Company News

ALEXANDER DUCKHAM

Group current assets £427,236 (£404,251), including stock-in-trade and stores £260,115 (£242,666), debtors and prepayments £152,643 (£117,732), cash £12,437 (£43,853). Current liabilities £252,284 (£204,184). Overdraft £24,352 (nil).

POWERS-SAMAS

While the gross trading profit of Powers-Samas Accounting Machines, Ltd., at £1,047,875 shows a slight increase against £1,040,401 in 1950, the profit available for appropriation and taxation is £49,203 less than the previous year. This is mainly due to the increase in the provision for depreciation arising out of the greater volume of machines on rental, the value of which (after depreciation) now stands at £1,719,018 against £1,314,321 for the previous year. The taxation provision for 1951 absorbs £344,200 of the profit of £652,234, leaving available for distribution £308,034 against £361,437 for 1950. Out of this sum the directors recommend a final dividend of 13¼% (1s. 4½d. per share), less income tax, which with the interim dividend paid on November 1, 1951, absorbs £122,850 (equivalent to a total dividend for the year of 45%, less income tax, on the £520,000 of issued capital as at December 31, 1951). This leaves a balance of £185,184.

CANNON IRON

Cannon Iron Foundries is doubling its interim ordinary dividend by paying on July 1, 10%, less tax, in respect of the year ending June 30, 1952. For the previous year the total was made up to 20%, less tax, with a final of 15%. The directors state, however, that the increased interim does not of necessity mean an increase in the total distribution for the year ending June 30.

BELL'S ASBESTOS

Accounts of Bell's Asbestos and Engineering, Ltd., for 1951, show group net profit (after deducting inter-company profit on unsold stock) £469,219 (£221,859), less taxation £290,236 (£130,475); group net profit, after providing for taxation, £178,983 (£91,384); net profit of parent company £135,519 (£81,593); available for appropriation £177,603 (£114,214). Having transferred £50,000 to general reserve and £20,000 to stock reserve, Directors recommend final dividend of 25%, less income tax, on the ordinary shares. Balance forward £56,198.

GLOVER AND MAIN

Owing to a printing error, the above Company's surplus was shown in our issue of May 7 (page 332) as £24,946. The figure should have read £224,946.

NORTH OF ENGLAND SECTION I.G.E.

THE North of England Section of the Institution of Gas Engineers held its first annual meeting in Durham on May 2, when a paper was given by Mr. F. BUNTING, Chief Accountant, Northern Gas Board. In it he pointed out that if it was possible to reduce the leakage of unaccounted for gas from 7¼% to 5%, the Board would be able to save £116,000 of the £414,650 a year this loss represents. The author also suggested that if the amount of investment in stores and materials could be reduced by 10% it would mean a saving of £100,000 a year.

Mr. W. O. KIRKWOOD, Sunderland Divisional General Manager and retiring Chairman, said that it was proposed to set up a technical panel drawn from members of the Northern Section of the Institution whose function it would be to discuss technical problems relating particularly to conditions in the North. If the scheme went through they could visualise the ultimate formation of technical committees. The suggested panel could provide useful information not only for the benefit of the Institution, but for the whole area served by the Board.

About 60 members from different parts of the North-East attended the meeting and elected as their new Chairman Mr. G. E. Anderson, Production Engineer to the Newcastle Division of the Northern Gas Board.

Mr. Kirkwood was presented with a framed certificate by Mr. Anderson to commemorate his past Chairmanship.

Other officers elected were:—

Immediate Past Chairman: W. O. Kirkwood.
Senior Vice-Chairman: G. W. Perks.
Junior Vice-Chairman: W. R. Garrett.
Hon. Secretary: Stanley Jones.
Hon. Treasurer: W. Sutcliffe.
Members of Committee: J. E. White (Newcastle) and K. Francombe (Whessoe, Ltd.).

Mr. Anderson was elected representative to serve as district member of the Institution Council, and Mr. Kirkwood was re-elected a member of the Hovey Educational Trust Committee. The following members were re-elected members of the District Education Committee: Messrs. F. L. Scaife, F. Wilson, W. Sutcliffe, and J. E. White.

Messrs. H. D. Lees and D. Yule were appointed Hon. Auditors.

Photographed at the luncheon of the North of England Section of the Institution of Gas Engineers on May 2, left to right, G. W. Perks (Senior Vice-Chairman), W. R. Garrett (Junior Vice-Chairman), and W. Sutcliffe (Hon. Treasurer).

Mr. KIRKWOOD paid tribute to the enthusiasm of the officers and Committee. He said he was satisfied that much progress had been made during the year and that the North of England Section would become a credit to the gas industry. He paid a special word of praise to the Section's Secretary, Mr. Stanley Jones.

Turning to the new Chairman, Mr. Kirkwood said Mr. Anderson was well known throughout the gas industry. His post as Production Engineer to the Newcastle Division, one of the largest undertakings in the country, was one of no mean responsibility. Mr. Anderson had for many years taken a very active interest in the Gas Association in the North. He had been Chairman of the Auxiliary Section of the North of England Gas Managers' Association, and was also a member of the District Education Committee. As Senior Vice-Chairman of the North of England Section for the past 12 months he had done a great amount of work to mould the section together.

Mr. ANDERSON, in reply, said he was conscious of the high honour bestowed on him and he was equally aware of the high standard of service he must give. Mr. Kirkwood's year of office, he said, had been conspicuously successful.

A feature of the meeting was the presentation of the Herbert Lees Memorial Prize and Certificate to Mr. Thomas Robson, of Chester-le-Street, Sunderland Division.

Presenting the Benevolent Fund report Mr. F. WILSON said that 80 of the 121 members of the Section now contributed to the fund. It was agreed to donate 20 guineas to the Benevolent Fund of the Institution.

Mr. W. O. Kirkwood (General Manager, Sunderland Division, Northern Gas Board), on left, is presented with a certificate, to commemorate his chairmanship of the North of England Section of the Institution of Gas Engineers, by Mr. G. E. Anderson (present Chairman) at the annual meeting of the Section. Third from left is Mr. G. E. Currier, O.B.E. (Senior Vice-President of the Institution of Gas Engineers), and on the right is Mr. S. Jones (Hon. Secretary of the Section).

Luncheon

At a luncheon which followed the business meeting the two guests of honour, Mr. G. E. CURRIER, O.B.E., Senior Vice-President of the Institution, and Dr. W. T. K. BRAUNHOLTZ, O.B.E., Secretary of the Institution, spoke.

Mr. CURRIER said it was very encouraging that membership of the Institution continued to rise. There were now something like 3,100 members. He said the standard required for corporate membership had been raised, which was all to the good.

From what he had seen and heard the North of England Section was getting good support from the Northern Gas Board.

Dr. BRAUNHOLTZ, appealing for more support for the Benevolent Fund, disclosed that at present 1,600 members of the Institution contributed nothing at all. He pointed out that if these 1,600 members contributed an overall average of 5s. each a year the fund would benefit by another £400 a year. If these 1,600 contributed 5s. under deed of covenant the fund would benefit to the extent of £750. Dr. Braunholtz complimented the Section on the fact that 66% of its members contributed to the fund. The average for the whole country, he added, was only 47%.

The Mechanical Handling Exhibition will open at Olympia on June 4 and run until June 14. Among items of interest to the gas industry will be a self-contained, mobile, elevating, de-breezing, weighing, and bagging unit capable of dealing with 25 tons of coke per hour.

COLOUR AND PRODUCTIVITY

THE influence of colour on living and working conditions is a fact which has not been accepted readily either by industry or the public as a whole. Vehement as were the advocates, and indisputable as was their evidence, the idea has been absorbed into our everyday life and beliefs only with the slow erosion of the years. Today, the fact that production can be increased and workers made happier by carefully devised colour schemes is accepted by almost all the major manufacturers, while shops, restaurants, and sometimes offices reveal the work of the colour expert. Considerable changes have taken place, but as a country we are still backward in this quite important matter. Gas boards' works, offices and showrooms continue to receive 'traditional' types of decoration, and except in a few cases there is no indication that our industry is keeping in step with present-day trends.

Perhaps those responsible for decoration of gas board premises take the line of least resistance—'it was green and cream before, why should we change it now?' Or maybe they regard the priests of the colour cult as 'arty' and far removed from the reality of a busy business world. If so, they are wrong. The British Colour Council has, over the past 16 years, dealt with a rapidly increasing number of requests for advice from large firms in all branches of industry, and the research conducted and the experiments made have brought about something of a revolution in industrial colour schemes.

That there is more in this colour business than meets the eye is amply proved by an interesting little exhibition now being held at the Council's premises at 13, Portman Square, W.1. Co-operating with the Council in the preparation of this exhibition is Holland & Hannen and Cubitts, Ltd., who have been closely associated in the technique of scientific colour usage and illumination in industrial buildings, offices, and workshops. Indeed, it is so much the policy of the Company to further this development that it has formed a specialist service, under the registered name of Psychromatics, which functions, by an exclusive arrangement, in close co-operation with the British Colour Council.

The exhibition is simply arranged and is easy for the layman to understand. Commencing with the basic range of colours, it is shown how their properties change in juxtaposition, and how they may create the effect of warmth, coolness, height, and so on. Pipe identification and machinery colours are dealt with, particularly in the light of the 5-15% defection in the colour vision of the male population. Offices, too, are shown with varying colour schemes, and an interesting section illustrates how colour ranges have been devised in conjunction with the paint industry. It is contended that attention to these matters has its reward not only in increased production but also in the reduction in absenteeism. Colour and Lighting in Industrial Productivity, as the exhibition is called, is therefore well worth a visit. The exhibition remains open till May 30.

Civil Defence Training

THE North Western Gas Board has launched an intensive programme of civil defence training, and in all of its 17 operational regions classes are now being attended weekly by senior key officials and engineers, who will in turn pass on instruction to the Board's 20,000 employees.

The classes, though voluntary, have been well supported, and unit civil defence officers will in due course be appointed from among the successful 'students.' At Preston in one week 14 officers from eight groups qualified as instructors.

Training and organisation are under the direction of Lieut.-Colonel W. H. Slack, the Board's Transport Officer, who has been appointed area civil defence officer and recently completed a staff course organised by the Home Office.

To mark the importance attached to the training by the Board the Chairman, Mr. D. P. Welman, has visited a number of the classes and addressed them on the urgency of being ready if the call for civil defence should come.

In Association with Stewarts & Lloyds, Ltd., the Tata Iron & Steel Co., Ltd., is erecting a steel tube works at Jamshedpur, Bihar (India), which will draw its supplies of strip from the new strip mill which the Tata Iron & Steel Company is to install. The first plant will produce welded tubes, and will have a capacity of about 80,000 tons a year. The manufacture of seamless and electric resistance welded tubes is also envisaged.

WOMEN'S GAS FEDERATION VISITS FLAVELS

During the Conference last month of the Women's Gas Federation at Stratford-on-Avon (see *Journal* of May 7, p. 304) some 60 delegates took advantage of the opportunity of visiting the factory of Sidney Flavel & Co., Ltd. They were welcomed to the factory by Mr. F. M. Rogers, the Sales Director, and they were further addressed by the Managing Director, Mr. Duncan Wright, Chairman of the Executive Committee, W.G.F., at a luncheon given in the staff canteen. Miss O. L. Humphries replied to the address of welcome. The photograph was taken during the visit.

CONSULTATIVE COUNCILS

East Midlands Not Satisfied With Coal Prices

THE increased coal prices imposed on the gas industry by the new coal price structure of the National Coal Board were deemed unfavourable when compared with the increase to electricity and general industry by members of the East Midlands Gas Consultative Council at Grantham on April 29. Alderman C. R. BATES presided.

Alderman C. R. Bates explained the relative increases in the price of coal for the gas, electricity, railways, and general industry, and reported on correspondence from the Ministry of Fuel and Power similar to that received by the West Midlands, South Eastern and other consultative councils and referred to in previous issues of the *Journal*.

Mr. H. C. Martin thought it would be interesting to know what the N.C.B. charged its own carbonising plant. Mr. Bates said 'I do not think we can complain about this in relation to what they charge us.' He added they had no information on what type of coal they got, whether it was good, bad or indifferent.

Mr. Martin remarked that percentage increases could be misleading. What they ought to have was the price charge increase. It was the price and quality, not percentages, that mattered. Alderman Bates said they were there in the interests of the public and they were interested in anything that affected the price of gas. In this coal was a factor. The Council was not satisfied with the reply given and ought to press for some equalisation of the charges made to the industry in relation to the others.

Members approved a resolution expressing dissatisfaction with the reply received from the Ministry and communicating the fact to the Gas Board.

No Special Tariff for Bakers

The Council rejected an application for a special tariff for the bakery trade, after the Chairman had pointed out that a complete answer was given by the Secretary of the East Midlands Gas Board on March 12 to what was a national problem.

Mr. A. Gwynne Davies, Secretary of the Board, pointed out that the largest single factor responsible for the increased prices of gas and coke was the heavy increase in the cost of coal, and suggested the baking trade might consider this a matter to raise during discussions concerning the maximum prices to be permitted for their products.

The preparation of the new standard tariff structure occupied many months of investigation and research. The Board specifically considered whether bakers should be entitled to a special rate and, having regard to all the circumstances, they decided that as a matter of principle they would supply gas for baking at a rate not less favourable than that charged to any other consumer of an equivalent quantity in the same price zone. This gave the baking industry no less favourable terms than any other industrial consumer of the same magnitude.

A Leicester bakery firm which raised the matter said the last increase in gas price came to 20% for the company and its associated biscuit factory. Another increase would be a serious blow. The price of gas compared unfavourably with that of oil and if they could obtain supplies of the latter they would not hesitate to consider conversions.

A member described as 'living in the past' the idea that people were entitled to concessions because they used gas at night. All gas made was being used. If a special rate was granted to one trade others would also ask for concessions.

It was unanimously agreed that the Gas Board should supply to the Council and its divisional committees details of its general plans and arrangements for exercising and performing its functions under the Gas Act within the divisions.

This followed a report by Mr. S. Purcell (Gainsborough) to the Lincolnshire Divisional Committee that he had received many enquiries from consumers at Gainsborough regarding the Board's proposal to open a new showroom and offices in the town. He was of the opinion that the Board was not giving the Council sufficient information and considered the Council should receive early intimation regarding proposals for the opening of new showrooms and offices. In the absence of such information members were unable to answer consumers' questions in regard to the proposals, or consider whether the siting of the showrooms was satisfactory.

A suggestion by Mr. W. Brown (Chesterfield) that industry should have an opportunity of considering price increases before being finalised was placed on the agenda for the next meeting after a further suggestion for an industrial committee within the Council.

In presenting the third annual report of the Council, Alderman Bates said it had been evident during the year from the number and variety of matters considered by the council and divisional committees that the existence and functions of the Consultative Council had become much more widely known to consumers. Consumers' knowledge of the Council's work was being acquired mainly through reports of Council meetings and divisional committees published in considerable detail by the Press throughout the area.

An addition to the report stated that a special purposes committee had been formed and had met on numerous occasions.

In the afternoon members of the Council toured the Grantham works of Aveling-Barford, Ltd. The annual meeting of the Council will be held in Nottingham on July 1.

South Eastern's Further Protest

PRIOR to the business meeting of the South Eastern Gas Consultative Council on May 6, the members listened to an interesting talk by the Board's Chief Technical Officer (Mr. J. E. Davis) on the subject of gas calorimetry and the means whereby the industry complies with the statutory regulations regarding gas quality. An example of a recording calorimeter was shown and its operation demonstrated, together with an apparatus for indicating the presence of sulphuretted hydrogen in the gas.

Mr. Davies explained how close it was possible, even on the smallest and most out-of-date works, to keep the quality to the declared calorific value and pointed out that if they failed to do so they were liable to prosecution and to refund to consumers the value represented by any shortfall in the gas quality. In the old days when each gas undertaking was a separate entity such a refund would not have been very difficult; but nowadays when, under the grid system, the gas manufactured at one point might be consumed at almost any other, it would be exceedingly difficult to decide to whom any such refund should be made.

The members of the Council showed great interest in Mr. Davies' remarks and afterwards asked him a number of questions.

The business meeting which followed (under the chairmanship of Councillor A. B. CONSTABLE) spent a good deal of time on further consideration of the Ministry's reply to the Council's protest against the new coal price structure, which gave no explanation of the difference in price to the gas and electricity industries. It was eventually decided to lodge a vigorous protest against the new scale being put into operation before being submitted to the Gas Council.

There was also further discussion on a matter raised at the Council's previous meeting—namely, the recommendation of the Association of Municipal Corporations to set up an appeals tribunal to consider increases in prices. It was emphasised by the Chairman that the consultative councils were in themselves just such a tribunal, and it was obligatory on the part of gas boards to bring before their councils any proposals to increase the price of gas. If, after due consideration, the consultative council came to the conclusion that an increase was not justified they had power to go direct to the Minister. There was consequently no necessity for any other kind of appeals tribunal.

It was agreed to put this matter on

the agenda for further consideration at the next meeting.

A sub-committee was appointed to consider ways and means to publicise the South Eastern Council's functions and activities, and the Council was informed that steps were being taken by the Minister of Fuel and Power to make further appointments to the Council, to replace vacancies which have occurred for various reasons during the past year.

Northern Urges Freedom of Choice

ALDERMAN JOSEPH HOY, Chairman of the Northern Gas Consultative Council, was congratulated at the quarterly meeting of the Council at Newcastle on May 12 on the work he is doing on behalf of the Council and the Northern Gas Board in urging local authorities to provide both gas and electricity services on their housing estates so that tenants may have freedom of choice.

Alderman Hoy reported that he had waited upon the appropriate committee of the Blyth Town Council. There had been a complaint from time to time in regard to many local authorities in the Board's area dividing new housing estates on a 50-50 basis as between the gas and electricity for the appropriate installations for cooking and washing. Blyth had had this 50-50 arrangement and because of that its tenants had been denied freedom of choice.

Following the deputation the Consultative Council had received intimation from the Town Clerk that provision would be be made in the preparation of future layouts of new housing estates for electricity for lighting and power and gas for clothes washing and cooking.

A deputation was to meet Wigton (Cumberland) Rural District Council to urge a similar concession. A like request was to be made to Sunderland Corporation, which was also carrying out the 50-50 policy.

The Council agreed to ask the Minister of Fuel and Power to request the N.C.B. to disclose to the gas industry the basis on which it formulated its price structure for coal. Coupled with this request the Minister will be informed of the Council's 'dissatisfaction' with the replies received to a resolution sent from the previous meeting protesting against the 'discriminatory manner' in which the last increases in coal prices were applied.

The Council received this resolution from Stockton Division Consumer Committee: 'That representations be made to the Consultative Council that the additional 1d. per therm charged by the Northern Gas Board to prepayment meter consumers for the hire of appliances should not be paid after the first 30 therms of gas per quarter have been used.' Consideration was deferred until the next meeting and the Chairman was instructed to take up the matter with the Chairman of the Board.

Dr. M. Barash, Coal and By-Products Officer of the East Midlands Gas Board, announces that as from May 19 his address has been changed to 39, London Road, Leicester; his telephone number is now Granby (Leicester) 651-4.

N.C.B.'s New Research Centre

TO meet the pressing need for increased research in the mining industry, the National Coal Board has bought a building and site at Isleworth, Middlesex, at which it is proposed to set up a new Central Research Establishment. The building can be used immediately for some of the work that the Board wants to put in hand and can be extended and developed when the building situation becomes easier.

The new Centre will be devoted to the investigation of underground problems. The existing Central Research Establishment at Stoke Orchard will concentrate on research into coal processing and carbonisation, with a view to finding ways of making the best and most economical use of the country's coal resources. This should make an important contribution to fuel economy.

Gas Appliance Talks. — The 'Sapphire' balanced flue space heater is relatively a newcomer to the gas industry and one which is likely to be used far more widely when its particular merits have been fully appreciated. During the three days, April 16, 17 and 18, a series of lectures was given to gas fitters and gas salesmen in the Torquay sub-division of the South Western Gas Board by Mr. L. T. Minchin and Mr. R. Boorn on behalf of Cowper, Penfold and Co., Ltd., the manufacturers. The talks began with a brief discussion in simple terms of the theory of the balanced flue heater, and then the actual fitting was discussed with particular reference to the procedure to be adopted in unusual cases.

Publications Received

We have received from The Institute of Municipal Treasurers and Accountants a copy of *Housing Statistics, 1950/51,* just published by the Institute. The return relates to nearly 500 authorities in England and Wales and is the second of its kind to be published. The return shows in respect of each authority the number of dwellings in housing revenue account, giving separately those completed during the year 1950/51, and the capital cost of houses completed during the year, showing, in respect of both two bedroom and three bedroom houses, the total cost divided between land, services and construction. Architects' and quantity surveyor's fees are also shown separately.

A summary of the housing repairs account shows the average contribution to the repairs fund on pre-war and post-war houses, and there is a summary of the housing revenue account, including the amount of the total rate subsidy per dwelling. Details are given of weekly net rents charged at March 31, for two bedroom houses, three bedroom houses, and 'all dwellings.' The latter category includes such items as bungalows, huts, flats, and shops, and flats in one unit.

A summary table shows averages and ranges for all authorities and similar figures for county boroughs, non-county boroughs, urban districts, and rural districts are appended.

* * *

The National Smoke Abatement Society's *Year Book* for 1952, just published, not only provides up-to-the-minute information on all phases of the Society's work, but also well reflects the vitality of this energetic organisation. Following complete lists of all the officers, divisional councils, executive council, etc., and of affiliated local authorities, is the 22nd annual report, including divisional reports and statements of account, with details of all subscriptions and donations to the Society for the year ended June 30, 1951; these total a little over £4,600. The general section of the publication embraces notes on the law relating to smoke and the investigation of air pollution, together with excerpts from the Simon Report on domestic fuel policy. Finally, the *Year Book* gives a directory of organisations concerned with air pollution and related subjects, lists of recent papers and reports, and a guide to relevant literature under appropriate subject headings.

* * *

Wherever food is sold or handled the law requires that there should be an adequate supply of hot water available to ensure cleanliness. There is no similar law affecting our homes, but hot water is essential. Its daily use for personal hygiene and proper cleaning of the home is a safeguard against dirt and disease. The Gas Council's new booklet, *Hot Water for Health,* gives a number of useful hints on the benefits derived from its use in the home and information on economical methods by which hot water on tap can be obtained with the help of gas. The booklet, which is illustrated by a number of sketches, includes useful first-aid hints such as treatment for shock, billious attacks, headaches, sore throats, and convulsions, the preparation of hot fomentations and dry dressings, and the sterilising of first-aid equipment. A final section describes some of the many different types of water heating apparatus available—bath heaters, circulators, multipoints, storage heaters, and coke boilers.

GAS INDUSTRY AND THE INDIVIDUAL

By ALBERT PICKARD,

Engineer, Manager and Secretary, Llanelly and Gowerton, Wales Gas Board.

From Chairman's Address to the Wales and Monmouthshire Section of the Institution of Gas Engineers, Tenby, May 9, 1952

THE valuable statement on the future organisation of research within the gas industry made by the present Chairman (then the Deputy Chairman) of the Gas Council, Colonel H. C. Smith, at the 1951 research meeting is one which all in our industry should welcome. If specialised chemists or technicians are required for a particular type of investigation concerning the gas industry, then it should be easier for the Gas Council to find the right men for the job; if better facilities are necessary, they should be better able to provide them; if more finance is required the same thing applies. The warning that 'it will not be the intention of the Gas Council to produce reports unless there is something definite to report, either of progress made or of difficulties that have not been surmounted' might have been more appropriately called a promise. In general these days there is not much time for the busy executive to read reports of incomplete investigations. At the same time, the assurance that those most closely associated with, or engaged on, scientific and technical work will have opportunities of discussing the progress of the work at more frequent intervals, is a very wise, and very necessary, provision. May we hope that the new arrangements will achieve the success they deserve, and if and when the time comes that we are required to apply the results of their findings, we should see that we are not lacking in endeavouring to remove, from our own industry at least, those adverse criticisms which now appear to be levelled at British industry in general. The Gas Research Board and the gas industry have done extremely well in the past; the greater degree of concentration and co-ordination of effort promised by the new arrangements should enable our industry to do still better in the future.

Education

For many years I have been connected with education within our industry having, for some years prior to coming to South Wales, sat on the Yorkshire District Gas Education Committee, the activities of which were mainly in the concentrated industrial area of the West Riding. There were instructional centres in gas engineering subjects at Leeds, Bradford, Huddersfield, Halifax, Sheffield, etc., all within reasonably close proximity. But what a different story in Wales, where Cardiff was the only centre providing instruction to the Higher Grade Gas Engineering level. Even then the students were so few that Ordinary and Higher Grade students had to receive instruction in the same class as each other, in order to assure the continuance of classes; the only other centre being Wrexham, where instruction was only available to Ordinary Grade level.

While the Cardiff arrangements are the best that can be made under the circumstances, such arrangements should be regarded only as an expedient. They must have imposed severe limitations on both the instructors and the students, since they were all trying to work through the syllabus of each of two different courses, within the lecture periods normally required by either one of those courses. However, negotiations were proceeding at national level for a revision of the Institution of Gas Engineers education regulations. It was believed at that time that these revisions would serve the dual purpose of increasing the professional status of the qualification for which the students would be studying; also, by taking advantage of the existing National Certificate courses of other professional bodies, would widen the means whereby students could obtain courses at a larger number of centres. The negotiations came to fruition in 1948, when the Revised Education Regulations were issued regarding the Associate Membership examination. Unfortunately, for areas like Wales with a large number of small undertakings spread over an extremely wide area, it is most difficult to secure at any one college a sufficient concentration of numbers of gas engineering pupils of the same educational level to justify the formation of a special course to meet the requirements of the Associate Membership examination.

The envisaged advantage of being able to study by means of existing National Certificate courses of other professional bodies is considered to be a disadvantage in this area, as it is necessary to study to Higher National Certificate level in order to secure exemption, on a subject-for-subject basis, for subjects taken in the Ordinary National Certificate course. This lengthens the period required to qualify in the Institution of Gas Engineers examination by the further two or three years required to take the main subject and any other compulsory ancillary subjects not already passed at the Ordinary National Certificate level. Under these circumstances, it now requires a minimum of six or seven years part-time study to secure the Associate Membership examination when studying by means of existing National Certificate courses, as compared with the five years under the old Gas Education regulations—*i.e.*, three years for Ordinary Grade, and two years for Higher Grade, although the normal period of articles is only five years.

There is objection in Wales to the procedure which it is necessary for students to follow when the specially devised course outlined on page 12 of the Regulations cannot be arranged, and students have to resort to studying by means of National Certificates, taking more subjects, and two or three years longer. This is the only course available throughout Wales and Monmouthshire. It is not forgotten that this method eventually results in the student acquiring the dual examination qualification of a Higher National Certificate (Mechanical) and the Associate Membership examination (Gas). But as the students point out, it is the Institution of Gas Engineers in which they are interested. If they take another professional body's examination up to Higher National Certificate level, then there is the inclination either to rest on their laurels, or to endeavour to fulfil the remainder of the requirements for membership of that other body, to the exclusion of that of the Institution of Gas Engineers.

This is an undesirable position, and I have raised the question of a possible amendment of the regulations on several occasions during the past two years, both on behalf of the District Gas Education Committee and the Board's Education Committee. However, the feeling is that since the regulations were agreed so recently with the other professional engineering bodies concerned, it is not possible to secure amendments at this early stage. Possibly the scheme operates more satisfactorily in the concentrated areas of London, the Midlands, the West Riding, South Lancashire, etc., where pupils of a high initial educational standard are more readily obtainable by industry than they are in scattered areas like ours. It is easy to offer destructive criticism, but very difficult to offer something constructive in substitution, since any constructive suggestions put forward must now be such as are acceptable to the Institution of Civil Engineers as well as our own Institution.

One criticism levelled at the present arrangement is that there is no instruction given in the first three years of the courses in any gas engineering subject. This is recognised, but it was felt that students should be able to gather together the elementary practical knowledge from their everyday work as articled pupils. They would then be in a better position to appreciate the technical college instruction in the main subject in the later years.

In other directions, thanks to the support and encouragement of the Wales Gas Board, the position is much better. The numbers of apprentices and centres for gas fitting classes have considerably increased, and a greater interest in the acquisition of full technological certificates aroused. This also applies to the courses of the City and Guilds in technology of gas manufacture and supply. Similarly, the course for the certificate in Gas Salesmanship and Consumer Service is now being studied in ever increasing numbers both within Wales and nationally, and we look forward to the day when the first certificate in this subject is awarded in Wales.

National Fuel Policy

Recently, some of us had the privilege of being present at a meeting under the auspices of the Ministry of Fuel and Power and the Welsh Fuel Education and Training Committee. During an address on 'Future Policy in Fuel Utilisation,' the speaker said it should be quite easily possible by a little thought on all industrial works' part—' that includes colliery boilers '—to save 20 mill. tons of coal a year if only the right measures of supervision were adopted. Dr. Bronowski is reported to have told the National Smoke Abatement Society that 'the largest store of energy this country possesses is the energy it wastes. . . . We talk grandly of harnessing the tides of the Severn at a cost of £100 mill., but half of that sum would modernise enough house and factory grates to save 20 mill. tons of coal a year.'

The first speaker talked of the advantages of an independent technical advisory organisation for industry in general, such as the one which was operative in the gas industry during the war, and of the desirable results to be achieved thereby. But during the discussion following the address there appeared to be a feeling that it would be in the national interests if the gas and electrical industries curtailed their selling activities, and indeed, that this would be a most commendable procedure. Surely, this is a short-sighted policy so far as the gas industry is concerned in relation to national fuel economy. It appears completely to overlook the fact that for every ton of coal carbonised not only are approximately 75 therms of gas produced, but 10 cwt. of solid fuel is returned to the market for sale as solid smokeless fuel (to say nothing about tar). The answer is for some means to be found whereby the inefficient grates (whether industrial or domestic) can be replaced with efficient ones, 'the right measures of supervision adopted' and a proportion of the 20 mill. tons of coal so saved made available to the most efficient of all the fuel industries, gas.

It is doubtful if any other industry has collectively done nearly so much as the gas industry in the field of efficiency of coal utilisation to see that the utmost possible value has been obtained from every ounce of coal coming to us, and also that the efficiency of all consuming appliances approved for sale by the industry—*i.e.*, gas and coke appliances—should stand at a high figure.

But we have not just rested there; many have been the ways in which we have endeavoured, during the past 11 years, to meet the national coal shortage difficulties without inconveniencing our consumers unduly, quite apart from increased fuel efficiency, I need only mention a few:

(*a*) Gasification of oil in horizontal and vertical retorts;

(*b*) use of producer gas dilution in conjunction with butane enrichment;

(*c*) liquid methane for meeting peak gas loads;

(*d*) utilisation of methane from underground colliery workings (North Wales);

(*e*) use of low volatile coal in substitution for coal and/or coke on producers and C.W.G.;

(*f*) butane/air mixture for distribution on small works to the exclusion of coal usage.

No doubt still more alternative methods and techniques will be evolved as time goes on. It would be against the national interest if the powers that be were to be influenced to act in any way that would impede the normal, natural development of a healthy and live industry such as ours. After all, we are a public service; our products and the appliances we sell make home-life a little easier, particularly for the classes of workers on which the industrial production of this country depends, whether it be for the export drive or for a re-armament programme.

If wives and daughters are to be expected to continue the good work they have done in factories and workshops, then they are entitled to, and should be provided with the facilities for obtaining, any labour-saving device which will help to relieve drudgery at home, thereby conserving their energies for factory work. And gas does reduce the worries and labour of housework and cooking. In addition to which there is the enormous national value of gas in increasing industrial productivity wherever heat treatment processes are required. Temporary measures may be dictated by the national economic position as an expedient, but it is to be hoped that such measures will be very short-term indeed.

Petrol from Coal

There is a feeling in some quarters that when the export market for coal goes, then supplies will be more than adequate. This seems to me to be doubtful; after all, other coal-using processes are being developed. We have not lately heard very much about the oil from coal processes, but perhaps not all are aware that in September, 1950, the South African Coal, Oil, and Gas Corporation, Ltd., was formed. Contracts for £8 mill. plant were placed, and in 1954 it hopes to start producing 50 mill. gal. of petrol per year from its own coal, of which it will use 1¾ mill. tons per year.

This does not affect our country directly; but £6 mill. of the plant has been ordered from Germany, and at least one source implies that this fact may also have some reference to the 'know-how' of the Germans following the intensive development of oil-from-coal processes before and during the war in that country. This, in turn, implies that important developments of the two known techniques of production have taken place, and that such developments on large scale plant have made the processes more attractive on a commercial basis than has previously been the case. If and when the export market for coal begins to fall off, much more may be known of the economics of the oil-from-coal projects on large scale plant, and surplus coal, if any, absorbed by this and similar new processes.

Evidence submitted to the Ridley Committee by the Federation of British Industries has been issued under the heading of 'National Fuel Policy.' Concerning the British coal industry, the Federation estimates that at present trends a true shortage, which is now 10/20 mill. tons per annum, will by 1960/65 have grown to a shortage of 50 mill. tons. If this eventually proves to be the case, then the position will be serious indeed; but the gas industry, by the production of gas and coke, can do more to alleviate the seriousness of this position than any other industry in the country.

About the same time, a report by the Research and Planning Division of the Economic Commission for Europe entitled 'The European Coal Problem' was published. This estimates that if present policies are adhered to in Western Europe, production might be 60 mill. tons higher in 1956 than in 1951; but also that the gap between demand and supplies available from Europe would actually be widened by 20 mill. tons, or if Polish exports ceased, by 30 mill. tons. On these statements it is reasonable to assume that the difficult coal position will not only continue, but will definitely increase, and that the export market for British coal is likely to be with us for some

years to come, so that our country cannot look for much relief from this quarter even if the economic need to export coal is removed.

Opportunities for Youth

The gas industry has ever been fortunate in having the services of men of high ethical standards (particularly as regards public service), and of deep loyalty. These qualities have always been in greatest evidence in time of national emergency. They have been cumulative and, given encouragement, have a greater potentiality today than ever before; and so, whatever may be determined to be in the best national interest, I am sure that we as individuals will endeavour to fulfil our allotted parts with that spirit of public service ever before us. However, I do feel it is a matter for regret that in some cases in the past salaries within our industry have tended to lag behind those of other large industries.

Youth today is more widely educated and has more definite ideas as to what it expects from life. It is prepared to do much to improve its technical skill and knowledge, but it has been trained, in the hard school of the last war and of the inter-war years, to place a value on its own services and to look ahead, not just at the immediate present. I believe that this is one of the reasons why we so often hear the criticism that our industry is not attracting the best type of educated youth to its ranks. It is not sufficient to offer good terms and conditions during the period of articles, although this is a considerable help. The prospective student looks beyond this to seek to ascertain what his position is likely to be when his articles are completed, and what are the future prospects for advancement to positions of responsibility with adequate remuneration commensurate with that responsibility and his educational training. In starting out on a new career they seek to place their services with the market that can offer them the best ultimate return. In an era of full employment this is inevitable, but it should not be forgotten that the best quality commands the highest price, invariably gives the best service, and proves the most economical in the end.

To young men I would say that it is still as true as ever it was that the more you put into a job the more you will get out of it. Also, they would be well advised to get rid of that common misconception that the boss has a cushy job, for the truth is that the higher one gets in any business organisation, the more time one must devote to it. For it is equally true that the higher the salary the more necessary is it that the service rendered in respect thereof should be more than justified. Good organisation and delegation of certain duties are essential for smooth working. But even so, the chief executive, whoever he may be, must be constantly alert to changing circumstances and give a great deal of time and thought to every section of the business concerned and the personnel employed; to costs and finance; to materials and processes; to methods and techniques; to national, area and local requirements; and to many other factors.

The Llanelly Undertaking

Early in July, 1942, a month after I took charge, we placed an order for an additional four 50 in. continuous vertical retorts, together with a new waste heat boiler capable of dealing with all the waste gases from the 12 retorts (the carbonising plant at that time was eight retorts in one setting), and also from a further four retorts (making 16 in all) if and when they were installed. In July, 1943, it was decided that a Government factory should be erected at Llanelly, to be in operation by October that year. As the estimated gas demands of this factory were extremely heavy and were anticipated to be sufficient to absorb all the gas we should obtain from the new retorts, it was decided to order a further installation of four retorts, and this was done in July, 1943.

The first extension was completed and went into gas production on November 1, 1943, the new factory starting to use gas on November 16 of that year. We were told that had town gas not been available, the particular firm would not have come to Llanelly, and therefore, the risk taken in ordering new plant in 1942, when we had no knowledge of this factory, was fully justified. The second extension of a further four retorts was completed and in production on November 1, 1944, and in May, 1945, the original bed of eight retorts was let down as one unit for repairs, going back to work in August of that year.

Although applications were made in February, 1946, and September, 1947, for still further extensions to carbonising plant, these have been delayed for various reasons. They provide for a further 16 retorts, complete with an additional waste heat boiler, coal and coke handling plant, coke grading plant, and bunkers, etc.

Demands were continually increasing, and had it not been, first for Yorkshire coal, and later (1950) the installation of a 750,000 cu.ft. C.W.G. plant from Barry, we should not have been able to meet our consumers' requirements. Indeed, in 1949 we had to resort to diluting our vertical gas with producer gas, bringing this back to the declared C.V. by admission of butagas, to meet peak loads, pending completion of the C.W.G. installation.

Ancillary Plant

There were four partly submerged purifiers installed about 1880, which had been converted at some time from water lute to dry lute type; also one small catch box which was still water lute with a seal of only 12 in. This latter was not used, due to 'blowing,' and so the purifiers were totally inadequate for the volume of gas with which they had to deal. A complete modern set of four cast iron overhead purifiers—30 ft. by 20 ft. by 6 ft. (on pile-driven foundations, as they were over the bed of an old waterway), complete with oxide bucket elevator and archimedes screw conveyor arrangement, were installed and put to work in October, 1944. The set was fitted with a steam heater on the inlet main, an individual heater on each box, and independent valve arrangement to each box for reversible flow purposes. A further feature was that each box was provided for extension by a further 20 ft. if ever this should be required in the future, to make the boxes 30 ft. by 40 ft. by 6 ft., and thus capable of dealing with 2½/3 mill. cu.ft. per day.

The only condensers were a set of annular atmospheric ones, and it was decided to scrap these as soon as replacements could be obtained and installed in 1945, and the connections left for a third to be installed. The third condenser, a new one of larger capacity than the others, was installed in 1950, and the set is controlled by means of a thermostatic arrangement on the water inlet actuated by outlet gas main temperature.

Considerable trouble with the station meter has been experienced from time to time, and the wet-drum type meter was, therefore, replaced with a Connersville type of 100,000 cu.ft. per hour capacity in December, 1944, complete with a P.V.T.T. recorder, and from that time it has been our practice to correct gas makes and sales in accordance with the Institution of Gas Engineers recommendations.

There were two exhausters of nominal capacity of 40,000 cu.ft. per hour, but in a rather poor condition; it was decided that the only way was to send them away for re-conditioning by the makers, but as they required some months to effect the repairs, it was not considered safe to send either away. It was decided to order and install one new one, and then send one of the old ones for repairs. And so a new Connersville type, with a vertical steam drive, capable of dealing with 100,000 cu.ft. per hour was fixed early in 1945, and has worked almost continuously since that time. One old one was then sent to the makers for complete overhaul. A new exhauster house has been completed this year in which a 100 000 cu.ft. per hour electric-driven Connersville type exhauster has been installed; the steam-driven Connersville type exhauster has been removed and re-fixed in the new building, and the two old exhausters are redundant. Thus

we now have two identical exhausters—capacity 100,000 cu.ft. per hour each—one electrically-driven, and the other steam-driven.

There was one set of small twin boosters disused, and one larger steam turbine booster of approximately 90,000 cu.ft. per hour. These were insufficient to meet peak loads, and therefore, in December, 1943, we ordered—one 200,000 cu.ft. per hour turbo booster—one 2,000 r.p.m. 6 ft. pressure lift, steam-driven, and one of similar dimensions electrically-driven.

These were installed and put to work in December, 1944. Unfortunately, it has not been possible to obtain the rated capacity from these machines due to the heavy pressure drop on the booster inlets created by the long lengths of main from the holders to the boosters. Consequently, at peak periods, we find it an advantage to use one of the new boosters and also the 90,000 cu.ft. per hour steam turbine-driven one.

Electricity Supply

There was no electricity supply on the works, although a D.C. supply was available in the offices and showroom buildings, for the use of a passenger and goods lift. In December, 1942, we entered into a contract with the local electricity supply undertaking for an A.C. supply to be brought on to our works. Most steam prime movers for intermittent usage were converted to electric drive (also the retort house lift), giving economies in operation and smoother working. Since that time the office supply has also been converted to A.C.

In August, 1951, we put to work twin electrostatic de-tarrers (ordered three years ago), and they have worked completely satisfactorily. The rated capacity is 110,000 cu.ft. of gas per hour at N.T.P. Also during August, 1951, we put to work a new static brush washer with automatic ammonia control (of the same nominal capacty as the de-tarrers), which has given every satisfaction.

It was obvious that additional land for development should be obtained if possible. After demolishing old and dangerous pottery buildings, and filling-up the old pottery cellars on the leasehold land acquired in 1928, on part of which the new showrooms and offices had been erected in 1938, we began to look round. Eventually in 1946, we secured the unexpired portion of a lease of what we refer to as the Pottery Street site adjacent to our works, measuring 110 ft. by 140 ft., which is now used for coal storage purposes. Two years later we acquired the unexpired portion of a lease on what is termed the Bres Site, alongside our works sidings. These additions enabled us to do a good deal of levelling, to re-organise completely the drainage system on the major part of the works, and to relieve congestion.

Gas storage consisted of three town gasholders of a total capacity of 650,000 cu.ft., and one C.W.G. holder of 85,000 cu.ft. capacity. The only alteration here was the erection of an additional lift on No. 3 holder in 1947, giving an increase of 100,000 cu.ft. In 1944, the Lancashire boiler was fitted with a preheater, superheater, and proper flue inspection doors. At the same time, the steam distribution system was completely renewed and efficiently lagged. Considerable fuel economies resulted.

The distribution system was composed of four units: 1. Lower (or Docks) district—12 in. governor. 2. Upper district—12 in. governor. 3. New district—16 in. governor. 4. Burry Port—10 in. governor.

Pressures in certain parts of the Lower (or Docks) district were far from satisfactory. Developments in connection with the copper works, a new bakery with a Baker-Perkins continuous bread-baking ovens, and a new cereal factory were anticipated, and there was a heavy consumption at the tinplate works. A short distance from the gasworks, the 12 in. main was connected into an 8 in. main in Station Road. In 1945, a further 8 in. main was tapped out of the 12 in. main—650 yds. laid and tested under H.P. air; a branch connection was made back into the existing 8 in. main at Marshfield Square, precautions being taken to leave suitable connections at both ends of the new 8 in. to enable it to be carried back to the works if and when necessary in the future, for use as a high pressure feeder main; also for carrying it further along from Marshfield Square away from the gasworks towards the extremities of the district. This main is to be extended for a further 470 yds. from Marshfield Square to Trinity Road later this year.

The Upper district lies to the east of the gasworks and extends roughly from the gasworks to include all the Swansea Road area—out to Llwynhendy and Trostre, Cefncaeau (North and South), and is fed by a multiplicity of 6 in. and smaller diameter mains tapped from the 12 in.; this supply was greatly improved in 1945 by taking a 6 in. supply from an ungoverned works pressure main through a 6 in. pressure reducing governor at Rhydyrafon, and laying along Heol Goffa, re-connecting this into the 6 in. Swansea Road main near Cae Cotton Farm.

A further improvement was effected in 1948 by replacing 600 yds. of 3 in. main in Swansea Road with 6 in. Still further improvement will be effected when the 10 in. main (2,200 yds.), approved by the Board to be laid during 1952, from Felinfoel through Dafen village to Bryn, is completed. This will back-feed through a pressure reducing governor into the mains system at its extremity on the Pontardulais Road, and will enable the domestic gas requirements of this rapidly developing building area to be met, at the same time providing a surplus for the development, both domestic and industrial, for Dafen village, and along the whole route of the main.

The 16 in. new district main extends for approximately 200 yds. from the gasworks and is then reduced to 15 in. along Pottery Street—as far as Vint's Square (near the showroom), where it is reduced to 8 in. along Market Street to Thomas Street, and also 8 in. along Murray Street to the end of Cowell Street, and then into a multiplicity of 6 in. and smaller-sized mains. Numerous 3 in. and 4 in. mains have been replaced with 6 in.—*e.g.*, Cowell Street, Stepney Street, Vaughan Street, West End, and part of New Road, with marked improvement.

The Burry Port unit was originally separate from the first three, but although this direct supply had been specifically laid to supply Burry Port only, this was not now the case, as certain connections had been taken from this main at the Llanelly end to meet housing and wartime industrial developments along the route of the main. This has now been rectified by running a new 10 in. main from the gasworks to beyond the last connection at Beach Road, connecting in at this point and blanking-off the original main on the Llanelly side of the connection; the original 10 in. main to the blanking-off point can be used for Llanelly Borough developments, and the Burry Port individual supply has been restored.

High-Pressure Feeder

The new main has been tested to 40 lb./sq. in. air pressure, and connections left for carrying the main further towards Burry Port, if necessary in the future, or for use as a high pressure feeder main.

Each section was part of a plan which set out to meet immediate needs and requirements, but at the same time was designed to be capable of being absorbed into a larger pattern to meet future developments as and when they should arise. This plan was not the work of one man, but of several, and many were the conferences which were held when these matters were under consideration, but before any decision was taken. Where necessary, that plan has been adjusted to meet circumstances different from those originally anticipated, but its broad principles and intentions have remained. Whether it will stand up to the ultimate development of the town as we have envisaged it—only time will tell; but up to now, it has more than justified itself in the increased service which has been given as a result, and I am convinced that our comparatively high sales record, both of gas and appliances, is a direct result of that increased service.

R. PESTELL,
Mechanical Superintendent,
Huddersfield, describes

Yorkshire Junior Gas Association

AN UNUSUAL GASHOLDER REPAIR

NO. 4 holder, Leeds Road gasworks, Huddersfield, was erected in 1916 by W. C. Holmes & Co., Ltd. The capacity is 4,500,000 cu.ft., three lifts in a masonry tank with 24 column guides. The inner lift is 42 ft. deep x 212 ft. 6 in. diameter. The tank is 43 ft. 5 in. deep x 220 ft. 9 in. diameter.

An unusual feature of the construction of this holder is the absence of roof trussing in the crown, rigidity of the crown being obtained by thickness of curb plate and by constructing it with a total rise of 16 ft. in a diameter of 212 ft. 6 in., which is greatly in excess of the normal practice. Inlet and outlet connections are by 36 in. C.I. mains entering the holder through the masonry tank in the traditional U pipe.

In September, 1949, it was noted that an unusual amount of condensate was extracted from the common inlet and outlet holder syphon pipe, and this was progressively increasing. By December of that year the amount of water and condensate to be extracted per day was in the region of 1,200 gal. To put the holder out of commission and endeavour to trace and repair what was obviously a break in the inlet and/or outlet connections was virtually impossible in the middle of winter, since this holder formed over 70% of the works' effective capacity. Accordingly, the decision was made to attempt to carry on until the Huddersfield holiday week of the summer of 1950.

The extraction of 1,200 gal. of water and condensate per day in December of 1949 slowly increased in volume, but no appreciable trouble occurred until July, 1950, when for some unknown reason it rapidly increased. When the holder was finally put out of commission water was entering at a rate of over 3,000 gal. per day, and pumping was continuous day and night to keep the holder in commission during the last three weeks.

Tracing the Source

To prepare a plan of campaign it was desirable to locate the possible break in the pipe. The inlet and outlet pipes drop vertically down the outside of the masonry tank to a depth of nearly 50 ft., enter a cast iron chamber 4 ft. 6 in. high x 6 ft. long x 4 ft. wide, divided centrally by a C.I. midfeather. The two 36 in. mains then proceed some 30 ft. through the masonry tank before rising vertically inside the tank to above the surface of the water.

The actual entry of the water could not only be tank water from a break in the pipes inside the tank, but also drainage water from the strata outside which were waterlogged, being adjacent to, and below, the level of the local canal. Alternatively, the masonry holder tank could be leaking, filling the surrounding strata with tank water, which in turn was entering through a break in the inlet and/or outlet pipes.

Chemical analysis of the water pumped out proved conclusively that it was strata water and not holder tank water.

This was in one way reassuring, since it tended to prove that the masonry tank was good and that the break was in the connections outside the tank, where men would not have to work with the full weight of several million gallons of tank water above. On the other hand, excavation was out of the question, due to the enormous cost involved, and there was no true 'dry well' down which an examination could be carried out.

It was considered that the most probable source of the fault was the bottom C.I. box, since it was known that in 1916 the joints of this had not been tight when built until caulked with copper strip.

The decision was made to tackle the job by putting the holder out of commission and entering down the inlet and outlet pipes. It was also decided not to purge the crown, since this, being of very steep rise, held a large volume of gas. Not only would this be waste, but would take too much valuable time to purge. Reliance was therefore placed on the Livesey manhole.

It was hoped, at this stage, that cracks in the pipes, C.I. box or leaking joints could be caulked with copper or lead—an illusion, I regret to say, which was only too quickly dispelled when the job actually commenced.

Preparation

The schedule was based on having the holder out of commission a maximum of nine days. The holder was emptied of gas for 6 a.m. on Friday morning, August 11, 1950.

Flexible pipes (3 in. dia.) were fitted to the holder crown to allow town gas from the other holders to be admitted as required, and a 3 in. vent pipe was fitted to allow gas to escape to atmosphere. These preparations were vital to a holder of this size particularly as we were to rely on the Livesey seal, which gave us a very small margin of safety. A hot sun could very quickly lift the holder sufficiently to unseal this, and, equally so, a sudden shower of rain, with consequent fall in temperature, could cause such contraction as to pull in the holder crown.

A gauge was fitted to the holder crown to provide a careful check on this position. A pressure of 2 in. plus or minus ½ in. W.G. was maintained throughout the whole time the repairs were in progress. This gauge was never left, day or night, while the holder was out of commission, and gas was constantly added or vented to maintain pressure equilibrium in the crown.

On completion of these fittings the holder was grounded, bringing the Livesey manhole into operation. The manhole was found to be in very poor condition and had to be filled by constantly running water to maintain the seal. Temporary 4-in. connections were then made to both inlet and outlet mains. With the manhole cover on the Livesey seal removed, the mains were purged with inert gas (2 hours). Immediately this was done the covers of both inlet and outlet mains were removed and an air blower was started up to pump air down one leg of the 50 ft. mains into the common syphon box and out of the other leg of the U pipes. The blower used was an electrically driven Connersville exhauster, with a 6-in. flexible pipe lowered down both mains in turn. This was carried out for 16 hours continuously.

It was considered dangerous to place full reliance on the tightness of the inlet and outlet valves. Therefore, as an additional safety measure, the 36-in. connecting mains were bricked up between the 36-in. Western valves and the holder, the brick walls being faced with cement.

The construction of the mains, and the fall to the holder, made it impossible to water seal these valves, and I commend the use of bricks in a case of this sort where Goodman stoppers or bags cannot be inserted due to lack of space and, in any case, do not give adequate gas tightness.

Winches for carrying men and materials down both inlet and outlet mains were erected. Rope ladders were also

fixed down all four open legs of the mains as escape hatches. To combat the incoming water while men were working down the pipes, a steam pulsometer pump was lowered to the bottom of the inlet main (capacity 2,000 gal. per hour). The choice of a pulsometer pump was decided mainly because it had to be lowered approximately 50 ft. down the main, and this type of pump starts automatically and can easily be controlled from the top.

Our plan of campaign rigidly excluded anything electrically driven down these wet mains. Dipping by plumb line had shown that the box and horizontal mains were flooding at the rate of 2 in. per min.

First Entry

On Sunday morning, August 13, first entry was made by means of rope ladder to ascertain the cause of the flooding. For this descent personnel were suitably clad in waterproof suits specially obtained. White mice, as a safety test index for conditions at the bottom, were used throughout the repair. No personnel at any time were allowed to descend unless wearing safety belts with ropes attached.

In spite of the air blower, conditions down the twisting rope ladder were grim, naphthalene and coal gas traces making the air very foul. (After the initial descent we did not again use the rope ladders, as the effort required to climb these in rubber suits after a spell in the bottom chamber was near to the limit of physical endurance.)

Worse was to follow, however, for on reaching the bottom we found that our somewhat 'wishful thinking' of a leaking joint requiring caulking, or some such defect, was far removed from the true position. The C.I. syphon box was cracked and fissured on both top and sides, and water was pouring in from at least a dozen places on the inlet main side of the box. Later, it was also found that the bottom or floor casting was cracked. So bad was the damage that, while examining it with the aid of flameproof lamps, we began to wonder not if we could repair the damage, but whether it was liable to collapse and crush us.

Before any attempt at repair could be made, it was necessary to remove naphthalene rust and dirt accumulated after 30 years' working, plus silt washed in by the water, both in the box and in the horizontal mains. This we did somewhat crudely by means of ropes and buckets lowered down the inlet main. In all, nearly three tons of deposit was brought out in this way.

Crawling up that dark tunnel under the holder, scooping wet, heavy mud, rust, and naphthalene into buckets, and dragging it back to the foot of the shaft is no way to spend a Sunday in August, and the work was particularly arduous in the foul, damp, cold atmosphere.

This completed, it was decided the box must be made safe from collapse before any repair could be effected.

Effecting Repairs

Steel plates $\frac{7}{8}$ in. thick were carefully cut to the shape of the box roof and floor—the roof plate, of course, having a 36 in. hole cut in it to accommodate the down main, also 2 in. holes at the required pitch circle for the bolts in the spigot piece on the top of the box. These plates were made in halves to enable them to be lowered down the vertical 36 in. main. Butt straps were made to bolt up when sited in the C.I. box. Ten jacks were made. These consisted of lengths of steel tubing 3 in. diameter with $\frac{1}{2}$ in. steel plates welded top and bottom. The top plate was drilled to accommodate 2 in. diameter steel bolts.

The floor plates were lowered down first and laid on the floor of the box. Sheet rubber insertion $\frac{1}{4}$ in. thick was used as jointing, with a 1 in. layer of Scott's cement under the rubber. The whole of the time the water was pouring in, which increased the difficulties enormously.

By using cross braces and eye bolts, the roof plate was pulled up against the roof top by means of a wire rope winch. Personnel were able to crawl along the horizontal main out of danger while the plates were hoisted.

Having pulled the steel plates tight against the box roof, we emerged from this invaluable 'foxhole' and were able to place the 10 jacks in suitable positions and tighten them up, thus making a permanent support from floor to roof of the C.I. chamber. While this eliminated the possibility of collapse, and stopped the major leaks, the water still poured in from cracks in the sides of the chamber. Attempts to caulk these cracks with both lead and copper proved of little avail. A brick wall was therefore built all round the inside of the syphon chamber (thus making a box within a box) using for this purpose cement fondu and Staffordshire blue bricks. Pipes were inserted through the wall at frequent intervals to allow the water to drain away and be pumped up the outlet main via the pulsometer.

These drain pipes were plugged on completion of the wall and setting of cement. The jacks were left in position, some of the outside ones being bricked in behind the wall. The floor of the box was then faced 3 in. deep with reinforced concrete. Apart from a few drops from the roof round the bolt holes, we appeared to have overcome the worst of our difficulties. The pulsometer pump was hauled up the outlet main and the entire operation was repeated in the other half of the box. This latter was purely a preventive measure against a similar occurrence, since the C.I. plates in this half of the box were unbroken.

Leakage Reduced

At this stage the leakage was reduced to two buckets of water over 24 hours, dropping entirely from the bolt holes in the roof plate. It was felt that even this negligible amount must be stopped, as it might become progressively worse in the years to come. Caulking again proved useless, and a different approach was adopted.

Holes were drilled 1 in. gas thread in the down main at various points within 6 ft. of the top of the C.I. box. This was a difficult operation, for, owing to the shape of the main and the close proximity of the junction of the box, we were unable to use a combination pressure drill, and the water pressure released as the hand drill went through was so great that it literally blew a man off the scaffolding.

However, in spite of frequent drenchings, holes were drilled and tapped, and pipes connected to a 3 in. Tangye steam-driven pump at ground level 50 ft. above. Cement fondu grog was pumped in at each point until the ground outside the box reached saturation point and would take no more cement. In all, we pumped 87 cwt. of cement round the box at seven different points. This, added to our previous measures, effectively sealed off the final traces of water within the box. Careful check after 24 hours showed the boxes to be perfectly dry.

The holder covers were then replaced, the safety walls removed from the inlet and outlet mains, covers replaced on the mains, and town gas fed to the holder on Friday morning, August 18, at 11 a.m.

After nearly 18 months no further trouble has occurred, and I feel that the work carried out has proved itself.

The cause of the damage was never ascertained, but three points are interesting:—

In the summer of 1949 weak earth tremors were recorded at the local observatory. Moreover, the summer was exceptionally dry and hot, which may have caused earth shrinkage.

The amount of cement grog pumped in showed that the earth round the box must, over many years, have been washed away, or unduly settled.

All these, no doubt, were contributory factors.

TRADE NEWS

Master Cookers

OUR photograph shows the 'Master' cooker with its new detachable plate rack which also serves as a plate stand. This development was shown for the first time at the Ideal Home Exhibition, Olympia, and became available to the public on May 1.

The cooker is constructed throughout in steel, the frame being of tubular steel and the panels and most other parts of pressed steel. The finish throughout is in black and cream vitreous enamel, acid-proof where required.

Special features of the appliance include a hotplate consisting of two panels

finished in black vitreous enamel. The four hotplate burners have individual spillage bowls and light-weight pan supports for easy cleaning. The hotplate burners are of special design and are spillage proof, non-corrosive, and easy to handle and to refit.

The novel design of the aluminised steel burner of the grill, in combination with heat resisting steel frets, gives an extra large effective grill area. A grill pan and a grid are supplied with all cookers.

The crown plate is finished in cream vitreous enamel, and the design of the cooker provides for ready access from all sides for easy cleaning, thus eliminating the necessity for a removal and separate tray. Coloured taps mounted on a vitreous enamelled facia panel are both distinctive and attractive. Safety self-locking taps are used exclusively. The smooth line mottled vitreous enamelled oven, also of pressed steel construction, has rounded corners and no dirt traps, ensuring speed and ease of cleaning. Two non-tip oven grids and a baking pan and tray are supplied with each cooker.

The oven is provided with a patent self-sealing door and automatic temperature regulator, and with a removable bottom tray ensuring cleanliness of oven and floor.

The vitreous enamelled back plate carries a removable dual-purpose plate rack which enables it to be used on a draining board if required. Other features incorporated in the 'Master' cooker include stabilisers for level fixing of the cooker on the most uneven floor.

We are informed by the makers that, in the light of experience and thorough and prolonged tests, they have decided to cover the 'Master' M.24 cooker by a five-year guarantee. This is a most interesting development.—*Master Gas Cookers, Ltd., 11, Argyll Street, Oxford Circus, London, W.1.*

Tanway, Ltd.

INTERESTING and effective literature has been issued by Tanway, Ltd., describing the firm's centralised lubrication equipment. The system delivers measured shots of oil or grease to a number of bearings, the size of each shot being suitably proportioned to the requirements of the individual bearing.

A general purpose installation consists of a pumping unit, incorporating an automatic reversing valve, connected by means of twin feed and return lines to a number of conveniently grouped metering blocks or feeders connected in series. Each feeder has two interconnected bores, one housing a piston valve, the other an impellor piston, which operate in the following manner:—

All passages being fully primed from the previous operation, pumped lubricant transmits pressure to one end of the valve chamber through a port in the back face of the block. The piston valve is pushed to the right, opening the connecting passage and allowing pressure to develop in the impellor chamber. The impellor is moved to the right, forcing lubricant up through the valve chamber and out to the bearing. Upon completing its stroke the impellor opens a port in the front face to allow lubricant to pass to the left-hand entry port leading into the valve chamber in the next block, where this sequence of operations is repeated. All feeders in the series operate progressively in this way.

When the last bearing connected to the other side of the system has been supplied, pressure is transmitted along a return line to the pump. This causes the automatic reversing valve to change delivery over to the second feed line which is connected into the end of the valve chamber of the feeder which has last functioned. All feeders now operate step-by-step in the reverse direction, supplying measured shots to the bearings connected to the system.

The introduction of the correct quantity of lubricant into each bearing is positively assured. Further, this is achieved without recourse to excessive pressure during any part of the operating cycle.

The general purpose system is admirably suited to practically every form of plant in which a number of bearings—say 10 or more—require occasional, periodic, or continuous controlled lubrication.—*Tanway, Ltd., Barnby Dun, Doncaster. Tel. Barnby Dun* 256.

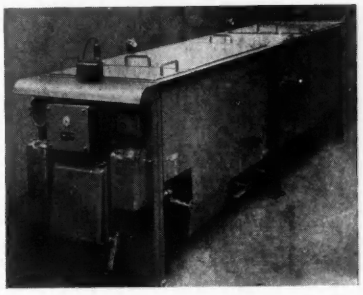
Ceag, Ltd.

IN gaseous or inflammable atmospheres the safety factor of portable lighting equipment is vital; in less exigent circumstances it is something extra that at the least is a sound insurance. Hence the significance of a new range of portable electric safety lamps introduced by Ceag, Ltd., manufacturers of miners' lamps. The firm has upwards of forty years' experience in the manufacture of portable underground lighting equipment for collieries, which has been freely drawn upon in developing the new range of lamps. Many of them carry the official approval certificate of the Ministry of Fuel and Power and/or Ministry of Labour and National Service. They will certainly interest the gas industry.

Apart from the hand torches, which are dry-battery operated, all Ceag lamps are rechargeable and are fitted with either a long-life alkaline battery or a lead-acid accumulator with Jellac unspillable electrolyte.—*Ceag, Ltd., Barnsley, Yorkshire. Tel: Barnsley* 2208.

Orcene

The latest addition to the well-known range of industrial degreasers made by the Orcene Co., Ltd., is the Orco Vat alkali degreasing plant. Alkali degreasing is recommended when a chemically clean surface is required. This high degree of cleanliness is particularly necessary prior to such processes as vitreous enamelling, electroplating, tin printing



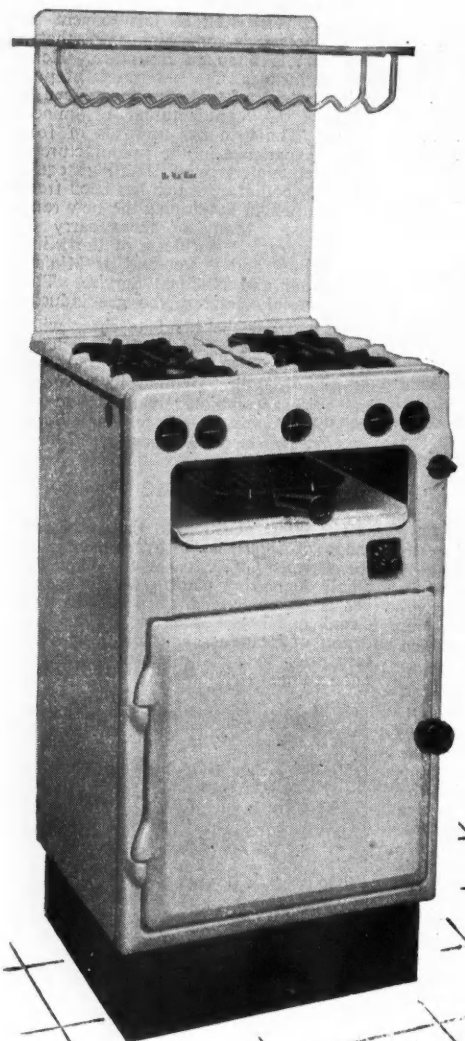
Orco Vat Degreasing Plant

and other types of decorative finishing where complete freedom from oils and chemicals is essential. It is possible, also, by adjustment to the alkali solution, to etch aluminium surfaces during the degreasing, either for decorative purposes or to provide a 'key' for subsequent finishing processes.

The Orco Vat is believed to be the only equipment of its kind with a self-contained oil separator. This motor-driven separator is positive in action and prevents the absorption of oil into the alkali solution. It also keeps the surface

(*Continued on page 456*)

We serve two masters



Yes, *two* masters—the general public and the gas industry. For the one we meet the need for efficient high-quality gas appliances; for the other we help to maintain a hard-earned reputation for integrity. To each we offer well designed, well-made, reliable appliances for the economical utilization of gas. To both—we hope—we give satisfaction.

* * * and

m-a-g-n-i-f-i-c-e-n-t-l-y

two mistresses

Yes, *two again*. With our De La Rue cookers we cater for the large-scale cook and the woman with a small family. For Hotel or Home, Cafe or Cottage, for the large house or the "little woman," these two cookers fill every cooking need.

The G4SS is the smaller cooker with 4 burners and a grill, soundly constructed in sheet metal and cast iron for hard wear and long life. The G5 is the large cooker with the imposing large-capacity oven. It is fitted with five burners and a grill and is available with or without a platerack. Both cookers are beautifully finished in a wide range of colours.

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